REMARKS

Claims 1-22 are pending in the present application. In the Office Action mailed May 11, 2007, the Examiner rejected claims 1, 2, 8-12, 15, 16, 18-20, and 22 under 35 U.S.C. §102(a) as being anticipated by Warfield et al., "Nonlinear Registration and Template Driven Segmentation," June 1999, herein, "Warfield." The Examiner next rejected claims 3-7, 13, 14, 17, and 21 under 35 U.S.C. §103(a) as being unpatentable over Warfield, further in view of Hasegawa "Fusion Imaging with CT/SPECT" Imaging Economics, November/December 2000.

Claim 1 calls for the specific steps of "determining at least two anatomical fiducial markers on a functional image," "determining corresponding points to the at least two anatomical fiducial markers on an anatomical image," aligning the makers with the corresponding points and "warping the functional image to fit constraints of the anatomical image while maintaining alignment of the at least two anatomical fiducial markers and the corresponding points on the anatomical image." In the rejection of claim 1, the Examiner indicated that paragraph 3 on page 1 of Warfield discloses all elements of claim 1. Applicant respectfully disagrees since Warfield fails to disclose the types of images required, the step of alignment, and the specific step of warping.

Warfield discloses nonlinear registration and template driven segmentation. This process allows the alignment of data sets that are mismatched in a nonlinear or nonuniform manner. Warfield, para. 1, pg. 1. Warfield further states that warping refers "to matching techniques that involve the computation of a deformation field between points of correspondence." *Id at para.3.* Furthermore, "elastic matching is used to refer to a subset of the available nonlinear registration techniques which operate by computing a deformation field through the minimization of a functional consisting of a term measuring local similarity and a regularization constraint based on a physical model of an elastic material." *Id at para. 3.*

Warfield fails to teach or suggest aligning and warping of a *functional* image with an *anatomical* image. Warfield's potential applications for nonlinear registration included scanning different persons' "brains for the purpose of characterizing both normal and abnormal anatomical variability, and the alignment of a model of anatomy with particular data for the purpose of segmentation." *Id.* at para. 2, pg. 1. Warfield does not disclose using a *functional* image with an *anatomical* image as claimed and disclosed in the specification. *See* spec. pg. 2, lns. 10-18 and pg. 14, lns. 9-26.

Furthermore, Warfield fails to disclose the claimed step of aligning because there is no teaching of determining markers on one image, determining points on another image, and then

aligning said markers and points on the images. Warfield discloses determining correspondences between data sets, but this is not equivalent to the claimed step of *aligning*, *determining at least two anatomical fiducial markers*, or *determining corresponding points to . . . the markers*.

Finally, Warfield fails to teach warping a functional image to fit constraints of an anatomical image while maintaining alignment of markers from the functional image with corresponding points on the anatomical image. Since Warfield fails to disclose warping of functional and anatomical images, it necessarily follows that Warfield fails to teach warping a functional image to fit constraints of the anatomical image. Additionally, any warping disclosed by Warfield does not include ensuring one image fits constraints of another image while *maintaining alignment* of markers and points between the two images, since Warfield fails to disclose a step of aligning. Warfield states that "'elastic matching' . . . operates by computing a deformation field through . . . a regularization constraint based on a physical model of an elastic material." Warfield, para. 3, pg. 1. However, this is not equivalent to warping an image to fit constraints of another image while maintaining alignment.

Accordingly, Warfield does not anticipate claim 1 since it does not teach a step of aligning that occurs prior to warping, warping a functional image to fit constraints of the anatomical image, or determining markers or points on images. As such, Applicant believes that claim 1 and the claims depending therefrom are patentably distinct from the art of record and respectfully requests a withdrawal thereof.

Similarly, claim 11 recites determining at least a pair of fiducial markers on a functional image and locating corresponding anatomical indicia on an anatomical image, then, generating a composite image of the functional and anatomical images such that the markers and the indicia are aligned and anatomical constraints are considered. In rejecting claim 11, the Examiner relied upon the same portions of Warfield as were used for the rejection of claim 1. However, as explained above, Warfield does not teach or suggest determining markers on one image, determining points on another image, and then aligning said markers and points on the images. Similarly, Warfield fails to teach or suggest determining at least a pair of markers functional image, locating corresponding anatomical indicia on an anatomical image, aligning the markers and indicia, or considering anatomical constraints. Thus, Applicant believes that claim 11 and the claims depending therefrom are patentably distinct from the art of record and respectfully requests a withdrawal thereof.

In rejecting claim 18, the Examiner used the same rejection as applied for claims 1 and 11. Similar to claims 1 and 11, claim 18 calls for identifying more than one fiducial marker on a

functional image and identifying corresponding anatomical locations on an anatomical image, then, generating an image with the functional image data superimposed on the anatomical image considering anatomical constraints. However, as set forth above, Warfield does not teach or suggest these claim limitations because there is no functional and anatomical images with identified markers and locations, and a superimposed image is not generated from the functional and anatomical images considering anatomical constraints. Thus, Applicant believes that claim 18 and the claims depending therefrom are patentably distinct from the art of record and respectfully requests a withdrawal thereof.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-22.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

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General Authorization and Extension of Time

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 07-0845. Should no proper payment be enclosed herewith, as by credit card authorization being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 07-0845. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extensions under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 07-0845. Please consider this a general authorization to charge any fee that is due in this case, if not otherwise timely paid, to Deposit Account No. 07-0845.

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